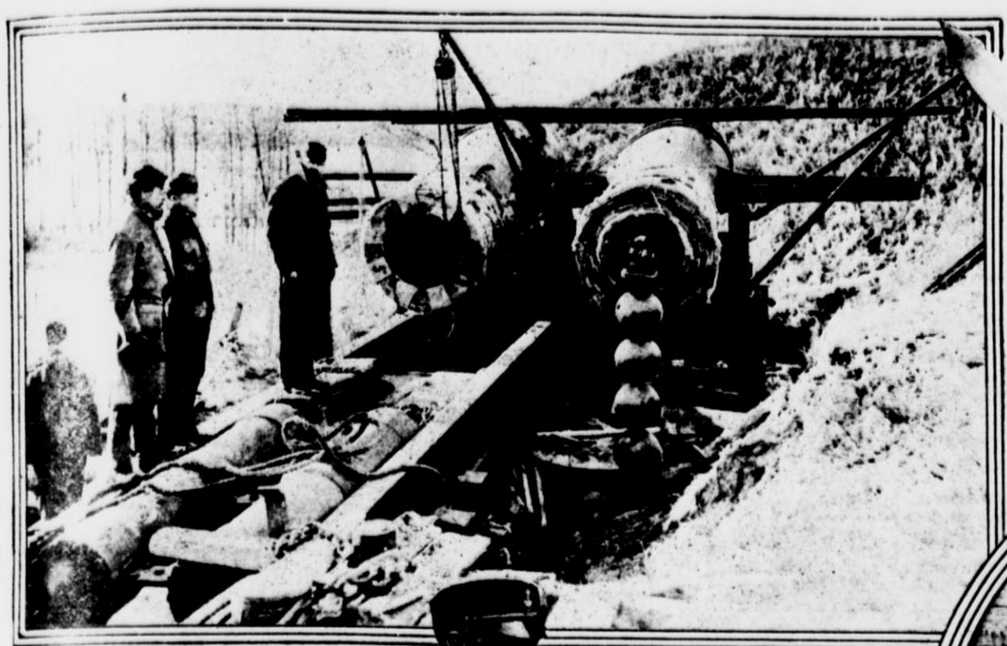
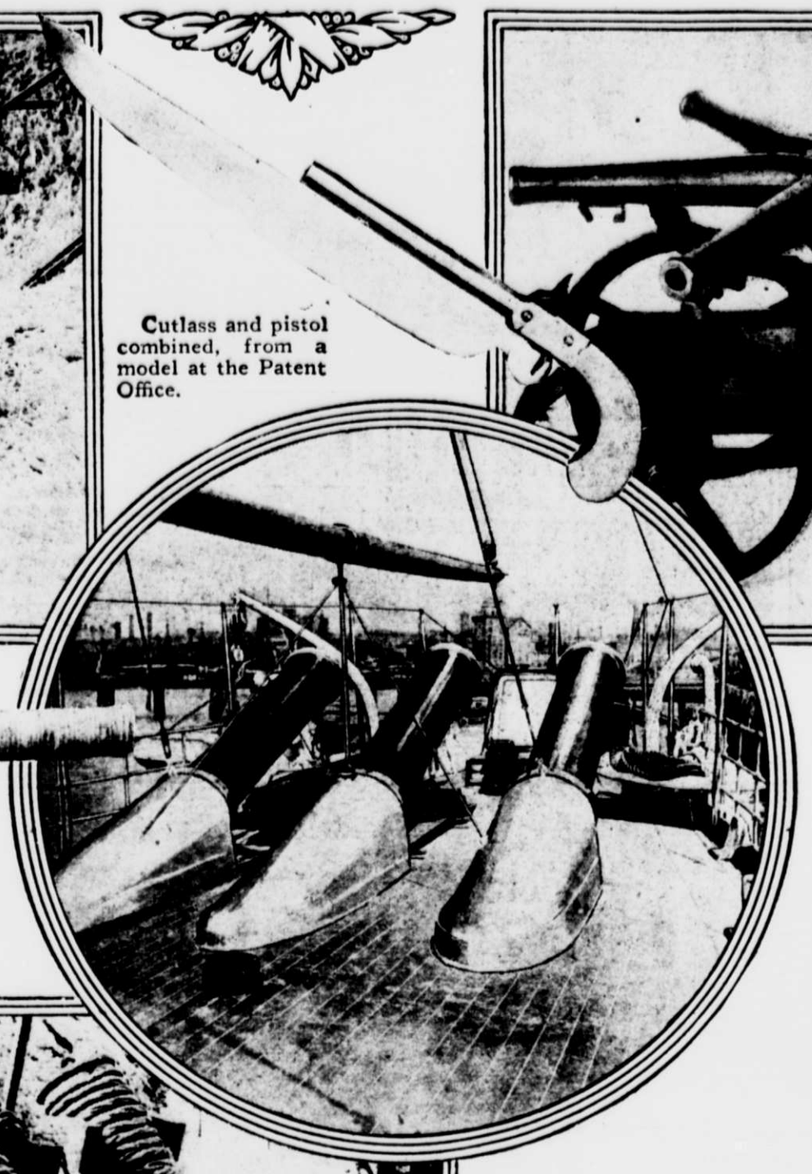
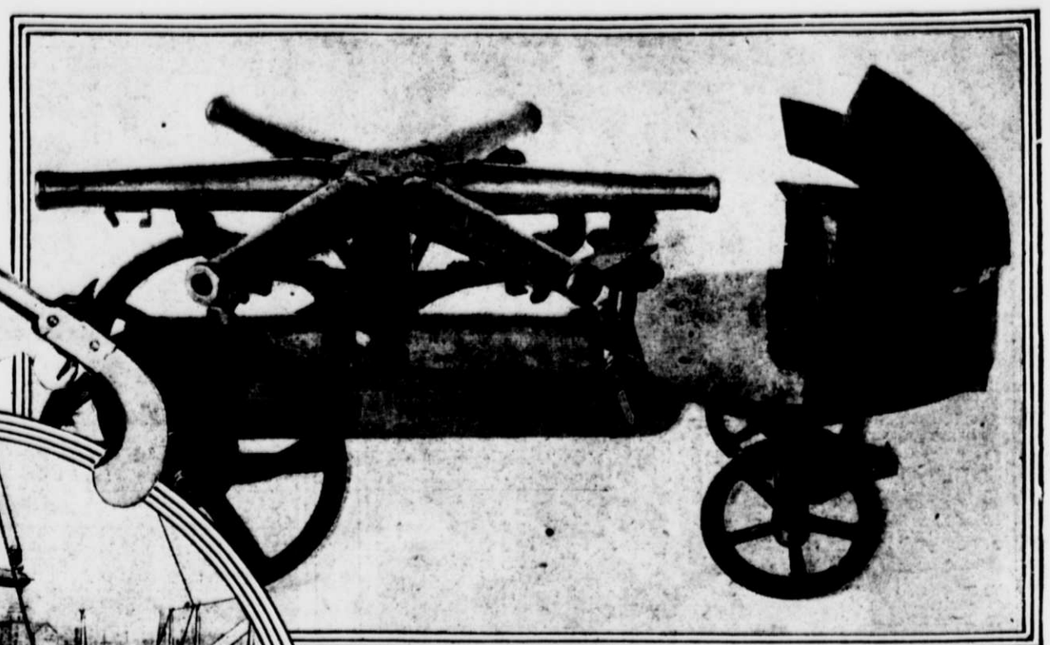
INVENTORS BUSY WITH PICTURESQUE WAR CONTRIVANCES



The giant magnet at Willets Point, for putting an enemy's compass "out of whack."



Cutlass and pistol combined, from a model at the Patent Office.



Revolving cannon, from a model at the Patent Office.

Death Dealing Devices Pouring Into Patent Office at Washington

European Conflict Giving Inspiration to Yankee Inventive Genius—Among Ideas Offered Few May Prove of Practical Use in Future Wars

By RENE BACHE.

NEW war inventions are pouring into the Patent Office at Washington. The European conflict is giving fresh inspiration to Yankee mechanical genius. Novel kinds of projectiles, portable forts, guns of a description hitherto unheard of and marvelous contrivances for fighting on the sea are among the ideas offered. A few of them may prove of practical use in future wars.

Warfare is a school of invention. Even now the contending armies in Europe are employing many devices altogether new, and of which nothing has been said in the newspapers. Thus, for example, the Austrian troops have shelter tents which when taken to pieces serve as storm coats for the soldiers. The material of which they are made is a strong, waterproof linen, bound along the edges with wide braid and provided with cords which serve the double purpose of fastening either tent or coat.

The newspapers have had somewhat to say about the "petrol bombs" which the Germans use for setting fire to buildings. These incendiary devices are new in modern warfare, but in effect a reproduction of an idea that dates back to the eighth century. For, as a matter of fact, they are substantially the same thing as the famous Greek fire. It was a mixture of petroleum, salepetre and pitch, and the most terrifying thing about it was that it was unquenchable, burning even in water.

Torpedoes loaded with high explosives and ingenious tools for tearing structures apart are part of the equipment carried by detachments whose business it is rapidly to destroy railroads, bridges, telegraph lines, &c. The Russians have tall observation towers, which, taken to pieces and distributed among men on the march, can be put together and erected in twenty minutes. Floating foot bridges fifty feet long, in use by the Austrians, are similarly reducible to portable sections, and, when a river is to be crossed a chain of them is quickly extended over a series of canvas boats, the latter being collapsible for easy transportation.

It is by no means certain that in the next great war liquefied air will not take the place of gunpowder as a propelling agent for rifle bullets. The so-called miracle gun invented by Paul Giffard, a Frenchman, utilizes this idea in a way that seems entirely satisfactory.

Air is compressed to a liquid in a steel cylinder, attachable to a rifle. A touch on the trigger liberates a small quantity of it, which instantly expands, exerting a pressure of 10,000 pounds to the square inch, and drives the bullet out of the gun. Another bullet drops automatically into the breech, and the operation is repeated.

There is no smoke and no flash. One cylinder is good for 150 shots, and costs 25 cents. That number of ordinary cartridges, at 3½ cents apiece, would cost $5.25. When the cylinder is used up another can be screwed on in a twinkling.

One of the most picturesque experiments in war contrivances ever made by the American Government was the dynamite cruiser Vesuvius, which took part in the war with Spain. She operated with the fleet in Cuban waters, off Santiago and caused considerable damage to the rocks in that vicinity by throwing her formidable projectiles, loaded with high explosive, against the hills along shore. They made an enormous noise but, apart from the shock their explosions may have inflicted upon the nerves of the Spaniards, they did no damage whatever to the enemy. It was decided finally that this type of vessel was not a success, and the Vesuvius was consigned to the scrap heap.

The dynamite guns she carried which could be aimed only by turning the ship into proper position, were the invention of an army officer, Capt. E. L. Zalinski. He was also the originator of a so-called aerial torpedo, containing a high explosive, which was provided with an electric battery to set it off at the proper moment. It was a chemical battery. So long as the chemicals were dry, the torpedo was harmless, so that it could be fired safely. It was meant to be thrown into the water near a hostile ship.

A hole in the shell of the projectile was plugged with gelatin, which would gradually dissolve under such circumstances, allowing water to enter. The water would energize the battery, exploding the torpedo and scattering the enemy's vessel over the waves in fragments not too large for kindling.

Perhaps the most remarkable experiment in war contrivances ever made by our Government was a gigantic electro magnet built a few years ago by Col. W. R. King, an army engineer, on top of a fort at Willets Point, near New York city. It was composed of two huge cannon and a steel bar, with several miles of insulated telegraph wire wound around the muzzles of the guns for an armature, the whole forming a sort of horseshoe arrangement. Thus was produced the most powerful magnet in the world, which was declared to be capable of deranging a ship's compass at a distance of six miles from the shore. It was proposed to use it for this purpose in case hostile vessels tried to approach at night or in a fog.

It was seriously suggested at the time by some unscientific person that a row of such giant magnets along the walls of a fort might be used to draw the small arms out of the hands of an oncoming enemy, much in the same way as the iron nails were pulled out of Sinbad's ship when she ventured too near the fabled mountain of lodestone.

An invention offered to the United States Government was bulletproof cloth for soldiers' wear. It was thought to be a crank idea, but tests of it made at Fort Sheridan gave rather surprising results. Krag bullets, which will kill a man two miles off or pierce 22 inches of oak timber near at hand, failed to penetrate it at 250 yards.

This "hempen armor," as it was called, was the idea of an Austrian engineer named Sarneo. It was made of hemp woven upon small steel wire rings and combined with a layer of some sort of fabric which even to-day is a secret. A shirt of it, elastic and not uncomfortable, weighed eight pounds. Herr Howe, a Mannheim tailor interested in the patent, allowed expert riflemen to take pot shots at him when clad in such a garment, and, aside from a few bruises, he was none the worse for the ordeal. Nevertheless, no Government was persuaded to make use of this means of protection, which may be regarded as a neglected war invention.

The notion of building a warship to serve exclusively as a ram seems preposterous enough to-day; yet the cruiser Katahdin, constructed by the Navy Department with this idea in view, dates back only to the period of the Spanish war. In order to employ such a mode of attack effectively the vessel obviously should have possessed extraordinary speed; but, as a matter of fact, she was rather slow, and, having no other means of offence, she proved about the most harmless type of fighting craft ever devised. When this came to be realized, she went to the scrap heap along with that other remarkable experiment the Vesuvius.

Inventors are constantly sending new ideas for war contrivances to the Navy and War departments. Frequently they ask enormous prices, running up into the millions of dollars, for the privilege of using them. One man not long ago offered a scheme for a rubber battleship, obviously preferable to vessels of ordinary steel construction, inasmuch as projectiles aimed at it might be expected to rebound and perhaps even to hit the enemy that fired them. The idea of another inventor was to get rid of the encumbrance of armor by stowing the plates in the hold and attaching them to the outside of the craft only when the foe was sighted.

A design filed with the Navy Department, and accompanied by elaborate drawings, was for a war vessel having three decks, each of them divided into twelve rooms. In place of masts, provision was made for three elevators, so arranged that each should open into four rooms on each deck. The rooms were to be built like safes, with every possible burglar proof contrivance. In other respects the craft was to be like any other warship.

As the inventor explained, in case of defeat the officers and crew could retreat by the elevators to the rooms, locking themselves in and bidding defiance to the enemy. The rooms being fitted up with every modern convenience for comfort, the personnel could amuse themselves playing cards and otherwise until the foe went away.

Another contrivance was a ram for the bow of a warship containing a gun which would fire itself automatically after the ram had punched a hole in an enemy's vessel. But decidedly more diabolical was a scheme for making counterfeit lumps of coal of metal painted black and varnished and filled with dynamite. These, it was suggested, might be secretly placed in the coal bunkers of a hostile warship or in the coal supply at a navy yard or a naval station, such work being suitably intrusted to spies. When shovelled into a ship's furnace they would explode.

Patents have been taken out for many different kinds of portable forts. It would of course be a great convenience for an army to be able to improvise and set up defensive works on brief notice at any threatened point. One inventor proposes to solve the problem in very simple fashion by the use of a quantity of ordinary railroad rails.

Of such rails a fence may be built of any height desired, enclosing a piece of ground of any size and shape. Banks of sand are to be thrown up on either side of the rail fence and molten iron poured in between. This accomplished, the fortification is complete, in one piece and puncture proof. A citadel within the inclosure may be made by building a room of rails, filling it with earth, pouring molten iron over it and then digging out the earth from the inside.

Another idea is to float over the enemy a fleet of paper balloons, each of them carrying fifteen pounds of dynamite, and upheld by hot air supplied from kerosene burners beneath. When the kerosene is used up the balloons will fall to the ground and accomplish widespread destruction.

A remarkable passenger projectile, to be fired out of a huge mortar, is designed to contain four or five soldiers, who by this means are to be shot into the camp or fortress of the enemy. Having arrived, they emerge and proceed to do as much damage as they can.

It is easy to imagine the consternation of the foe on finding hostile warriors among them and more arriving every minute in a series of shells that hatch out fighters like so many dragon's eggs. Dragon's teeth, such as Jason sowed for military purposes, do not fit the metaphor. Rubber pneumatic tubes, three of which encircle each shell, provide against shock on landing.

A New York man has patented a projectile which holds in its sides, as in pockets, two supplementary projectiles attached to it by chains. When it is discharged the twin projectiles fly out, and the triple shot revolves, cutting everything to pieces in its path.

Another kind of projectile, which promises equal destructiveness, is cut into four quarters, which are chained together in pairs, the chains being stowed inside of the shell. When it is discharged the four parts spread out, cutting a wide swath through the adversary's ranks.

Even better calculated to strike terror into the hearts of the foe is a cannon that fires an immense pair of shears, which will cut whole regiments in twain. A big gun that shoots water may strike the average military critic as an absurdity; nevertheless, it is quite true that naturalists use water cartridges to kill humming birds. But one of the best ideas is represented by an armored field gun, a cannon enclosed in a cylindrical kettle, the latter having a dome shaped top. The whole affair is mounted on a pair of wheels and is to be drawn by a pair of horses. A man sits inside the kettle and fires the gun, which thrusts its nose out through a porthole. The enemy may shoot at the gunner and his perambulating fort as they list; he can afford to be indifferent.

It is all very well to make fun of such crank notions, but it is not always easy to distinguish the nonsensical from what is practically useful where inventions are concerned. As already shown, the Government has in a number of instances undertaken, with seriousness and at great expense, experiments in war contrivances which have turned out little short of ridiculous. The Patent Office itself did actually only a few years ago grant a patent for a perpetual motion machine without realizing the fact until too late.

On the other hand, in a number of instances the Patent Office has rejected as impracticable ideas which eventually proved to be of great value. Less than a dozen years ago it looked upon flying machines much in the same light as contrivances for perpetual motion.

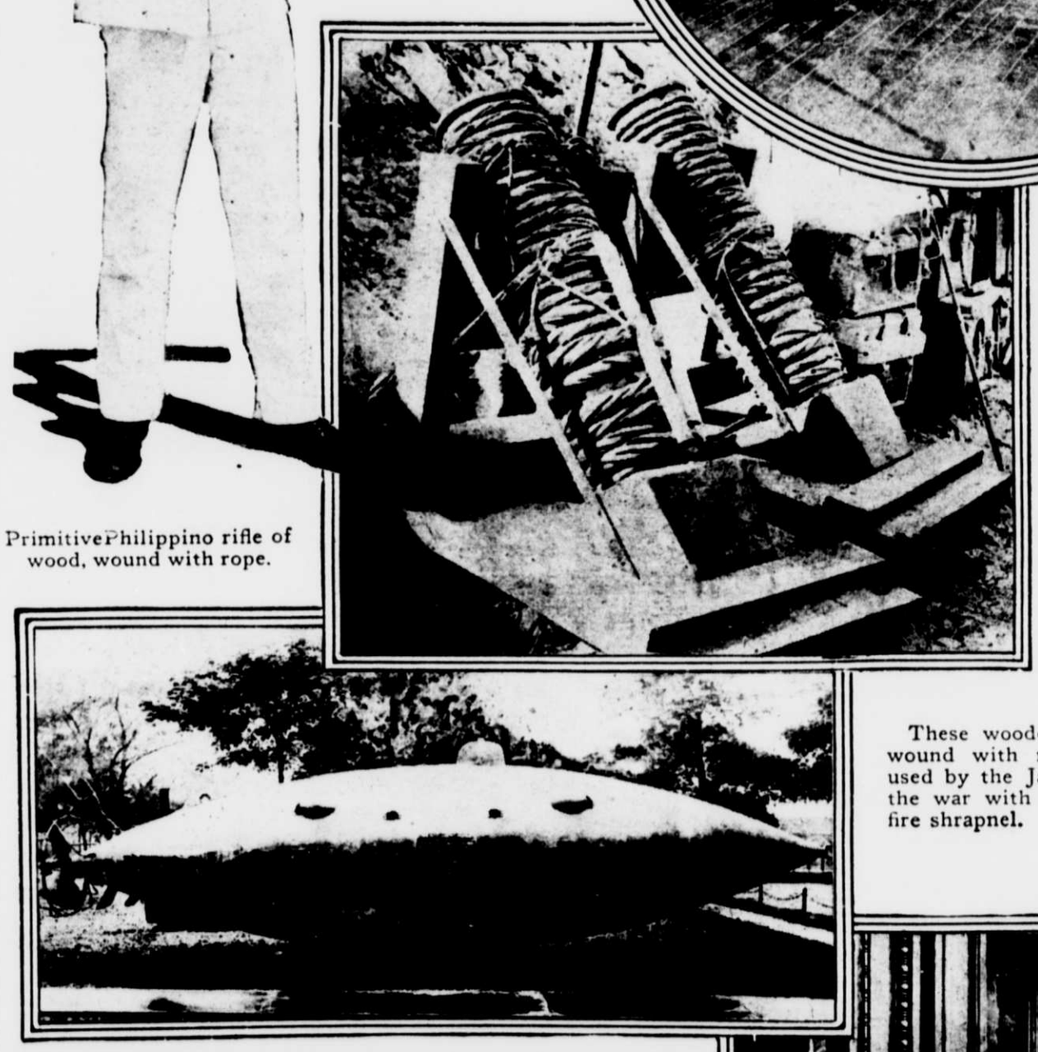
Up to 1856 bullets were moulded from melted lead by hand, costing a cent apiece. The process was not only expensive but slow. A machine was then invented by William H. Ward which turned out bullets from cold lead at the rate of 150 a minute. They were formed from reels of lead wire, each movement of the apparatus cutting off enough metal for one bullet, which was shaped by a punch entering a die. On the retrograde movement the die opened and the bullet dropped out.

By this means a ton of lead could be converted into bullets for $1.92. The contrivance was automatic, requiring no attention after it was started, and there was no waste of material. By the hand method about 15 per cent. was wasted.

When the civil war broke out the United States Government, ignoring Ward's patent, copied his machine and proceeded to manufacture bullets wholesale. Nearly all of the bullets fired by the Federal troops during the war were turned out from machines built on the Ward model, thus saving an enormous amount of money and the labor of thousands of men. Each machine could manufacture 10,000 bullets an hour, or 1,500,000 a week, running night and day.

The Government paid Ward not one cent for this infringement, and for nearly twenty-five years he besought Congress in vain for at least partial remuneration. There was no question of the justice of his claim, and bills for his relief were repeatedly passed by Senate and House, though never by both houses in the same Congress. Consequently he never received a cent, and for a year or two before he died he was employed as a doorkeeper at $60 a month in the Department of Agriculture, being reduced to poverty.

It was this same Ward who invented the process for casting bombshells from molten iron. The Government appropriated this idea also for use during the civil war and never paid him a cent for it. Which furnishes an illustration of the fact that republics may be no less ungrateful than monarchies.



Primitive Philippino rifle of wood, wound with rope.

Dynamite guns of the Vesuvius which attacked the mountains at Santiago, Cuba.

The "Intelligent Whale," a submarine boat built in 1864. Thirteen men composed her crew, and she was propelled by hand. Cost $50,000. She is now preserved in the Brooklyn Navy Yard.

These wooden cannon wound with rope were used by the Japanese in the war with Russia to fire shrapnel.

Multiple cannon, from a model at the Patent Office.

Wooden cannon covered with leather—Philippine Islands.

Policemen in Clover

THROUGH the action of the city in acquiring the old Arrowhead Inn, 177th street near Haven avenue, on Washington Heights, the police of the Forty-second precinct have been made a happy body of men. It was certainly a decided change for them to be moved from their old quarters in a store at St. Nicholas avenue and 179th street, where there was barely enough room for the complaint desk, to the more spacious quarters in the old inn which in the past has been the scene of many jolly gatherings.

Instead of rows of apartment houses they now find themselves surrounded by green lawns and fruit trees, which adorn the grounds in the midst of which stands the station. The house has the appearance of an old mansion and if it were not for the familiar green lights it would be impossible to recognize the building as a police station. Certainly it is the most inviting police station in New York.

Although the police have been established in their new quarters for only a short time it is noticeable that some of the stout men have greatly reduced their girth. This is due, it is said, to the expanse of ground surrounding the new station, which affords plenty of room for handball and lawn tennis courts.

The policemen attached to the station are anxiously looking forward to the next season when the fruit trees in the yard will blossom again. There will be enough peaches and cherries to satisfy all men attached to the station.

In the near future the mounted men who patrol the district will probably have quarters here. There is a stable in the rear of the new station where ample accommodations can be found for the horses of the mounted police. At present the horses are stabled in West 152d street.